Notice of Allowability	Application No.	Applicant(s)	
	09/987,953	ITOH ET AL.	
	Examiner	Art Unit	
	David N. Spector	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *supplemental amendment submission under 37 CFR. 1.114, on 11/16/2004*.

2. ☒ The allowed claim(s) is/are *1-54*.

3. ☒ The drawings filed on *09 December 2002 and 03 July 2003* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☒ Certified copies of the priority documents have been received in Application No. *09/029,080* .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other *DETAILED ACTION*.

DETAILED ACTION - ALLOWANCE

Status of the Application

A Notice of Non-Compliant Amendment (37 CFR 1.121) was mailed to applicant on 3/16/2005, in regard to a supplemental amendment, filed 11/16/2004. Such Notice is not germane to the aforesaid supplemental amendment submission (e.g. under 37 CFR. 1.114) filed in the instant REISSUE APPLICATION. The Notice of Non-Compliant Amendment (37 CFR 1.121) is therefore vacated/withdrawn.

Claims 1-54 are allowed in light of above-noted supplemental amendment submission under 37 CFR. 1.114. All pending claims thus being allowable, prosecution on the merits is closed in this application. A statement of the examiner's reasons for allowance follows, below.

Reasons For Allowance

Applicants' independent claims are directed to a polarizing conversion device (Claim 1) with particular features for controlling unwanted stray light, a polarizing illumination device that includes the instant polarizing conversion device (Claim 8); a display apparatus (Claim 18) that includes the polarizing illumination device and a modulating device; a projector (Claim 19) that includes the polarizing illumination device, at least one modulating device, and a projection optical system; the method embodied in the instant polarizing conversion device (Claim 22); and to an alternative representation of the instant polarization conversion device in a means-plus-function format (Claim 27).

Each of these independent claims includes the extant features/limitations of the polarizing conversion device of independent claim 1 including, *inter alia*, a selective phase plate which aligns a polarization direction of one of a **P**-state and **S**-state polarized beams separated by the aforementioned polarizing separation element with a polarization direction of another of the **P**-state and **S**-state polarized beams, and a light-shielding element which prevents light from directly entering the reflecting plane interposed at the light incident side of said polarizing separation element as recited in each of applicants' independent claims. The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitations of applicant's independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The

claimed invention is therefore considered to be in condition for allowance as being novel and nonobvious over prior art.

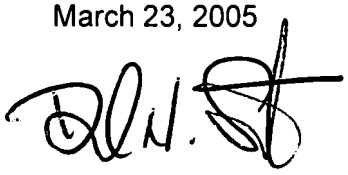
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Other Remarks/Information

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any other inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Spector whose telephone number is (571) 272-2338. The examiner can normally be reached at this number Monday through Friday between 6:00 AM and 2:30 PM. The fax number for the organization where this application is assigned is (703) 872-9306.

March 23, 2005



DAVID N. SPECTOR
PRIMARY EXAMINER

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
David N.. Spector	
ART UNIT	**PAPER**
2873	20070801

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

A supplemental examiner's amendment to the record appears below which corrects a variety of format errors and other informalities extant in the specification and the claims. Authorization for this examiner's amendment was given in a telephone interview with applicant's attorney, John S. Kern, on July 21, 2007. CLAIMS 1-54 IN THIS REISSUE APPLICATION WERE ALLOWED ON 02/28/2006.

BY THIS SUPPLEMENTAL EXAMINER'S AMENDMENT, CHANGES TO THE SPECIFICA-TION are made by submission of the entire text of each rewritten paragraph in compliance with 37 CFR §1.173(b)(1), including markings pursuant to 37 CFR §1.173(d). CHANGES TO THE CLAIMS are made by submission of a new listing of claims 1-54 which replace all prior versions, and listings, of claims in the application. Claims 28-45 are amended to reflect matter added by reissue in compliance with 37 CFR § 1.173(b)(2) including marking pursuant to 37 CFR § 1.173(d). No new matter is added.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be ob-tained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any other inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Spector whose telephone number is (571) 272-2338. The exam-iner can normally be reached at this number Monday through Friday between 6:00 AM and 2:30 PM. The Official FAX number for the United States Patent and Trademark Office is (571) 273-8300.

David N. Spector
Primary Examiner
Art Unit: 2873

SUPPLEMENTAL EXAMINER'S AMENDMENT

A supplemental examiner's amendment to the record appears below which corrects a variety of format errors and other informalities extant in the specification and the claims. Authorization for this examiner's amendment was given in a telephone interview with applicant's attorney, John S. Kern, on July 21, 2007. **CLAIMS 1-54 IN THIS REISSUE APPLICATION WERE ALLOWED ON 02/28/2006.**

BY THIS SUPPLEMENTAL EXAMINER'S AMENDMENT, CHANGES TO THE SPECIFICATION are made by submission of the entire text of each rewritten paragraph in compliance with 37 CFR §1.173(b)(1), including markings pursuant to 37 CFR §1.173(d). **CHANGES TO THE CLAIMS** are made by submission of a new listing of claims 1-54 which replace all prior versions, and listings, of claims in the application. Claims 28-45 are amended to reflect matter added by reissue in compliance with 37 CFR § 1.173(b)(2) including marking pursuant to 37 CFR § 1.173(d). No new matter is added.

IN THE SPECIFICATION:

Replace the title with the following:

POLARIZATION CONVERSION ELEMENT, POLARIZATION ILLUMINATOR, DISPLAY USING THE SAME ILLUMINATOR, AND [PROJECTION TYPE DISPLAY] PROJECTOR

Replace the paragraph beginning at column 1 line 9 with the following:

The present invention relates to a polarizing conversion device and a polarizing illumination device for generating, from incident light beams as randomly polarized beams, illuminating beams that have a more uniform light intensity distribution in an illumination region than that of the incident beams and are polarized in almost the same direction. Furthermore, the present invention relates to a display apparatus and a [projection display apparatus] projector using these devices.

Replace the paragraph beginning at column 6 line 58 with the following:

A [projection display apparatus] projector in accordance with the present invention comprises a light source, a first optical element for separating a light beam emitted from the light source into a plurality of intermediate beams, a second optical element disposed near the position where the intermediate beams converge, a modulating device for modulating a light beam emitted from the second optical element, and a projection optical system for projecting the light beam modulated by the modulating device onto a projection plane, wherein the second optical element has a condenser lens array that includes a plurality of condenser lenses for respectively condensing the intermediate beams, a polarizing separation element for spatially separating each of the intermediate beams into an S polarized beam and a P polarized beam, a selective phase plate for aligning the polarization direction of one of the S and P polarized beams separated by the polarizing separation element with the polarization direction of the other polarized beam, and a superimposing lens for superimposing the polarized beams, the polarizing separation element has a polarizing separation plane for separating the P and S polarized beams by transmitting one of the polarized beams therethrough and reflecting the other polarized beam and a reflecting plane located almost in parallel with the polarizing separation plane to reflect the polarized beam reflected by the polarizing separation plane toward the emergent direction of the polarized beam transmitted through the polarizing separation plane, and at least one of a shading means and an optical attenuating means for preventing each of the intermediate beams from directly entering the reflecting plane is interposed between the first optical element and the polarizing separation element.

Replace the paragraph beginning at column 7 line 22 with the following:

By adopting the above structure, the [projection display apparatus] projector of the present invention can effectively prevent a phenomenon in which other polarized beams polarized in a different direction mix into polarized beams of almost the same type polarized in the same direction. Therefore, when a polarizing plate is used to obtain a required polarized beam to be modulated by the modulating device, it is possible to prevent the increase in temperature of the polarizing plate caused by absorption of an unnecessary polarized beam, and to substantially simplify and reduce the size of a cooling device for cooling the polarizing plate. A liquid crystal device may be used as the modulating device.

Replace the paragraph beginning at column 7 line 44 with the following:

The [projection display apparatus] projector further comprises a color light separation means for separating the light beam emitted from the second optical element into a plurality of colored lights, a plurality of modulating devices for respectively modulating the colored lights, and a colored light synthesizing means for synthesizing the colored lights modulated by the modulating devices, wherein a synthesized beam synthesized by the colored light synthesizing means is projected onto the projection plane through the projection optical system. Since exclusive modulating devices can be placed respectively for more than two separated colored lights, it is possible to achieve a compact [projection display apparatus] projector capable of projecting and displaying a color image that is bright and has a high color reproducibility and a high resolution.

Replace the paragraph beginning at column 7 line 59 with the following:

In the above [projection display apparatus,] projector, the modulating device may be formed of a reflection-type liquid crystal device. In general, the reflection-type liquid crystal device provides the advantage of easily obtaining a relatively high aperture ratio even if pixel density is increased. Therefore, adopting of the above structure makes it possible to achieve a compact [projection display apparatus] projector capable of projecting and displaying a color image that is bright and has a high color reproducibility and a high resolution.

Replace the paragraph beginning at column 8 line 38 with the following:

FIG. 12 is a schematic structural view showing the principal part of an optical system in a [projection display apparatus] projector according to a third embodiment of the present invention, in which the polarizing illumination device shown in FIG. 1 is incorporated.

Replace the paragraph beginning at column 8 line 43 with the following:

FIG. 13 is a schematic structural view showing the principal part of an optical system in a [projection display apparatus] projector according to a fourth embodiment of the present invention, in which the polarizing illumination device shown in FIG. 1 is incorporated

Replace the paragraph beginning at column 8 line 48 with the following:

FIG. 14 is a schematic structural view showing the principal part of an optical system in a modification of the [projection display apparatus] projector according to the

fourth embodiment of the present invention, in which the polarizing illumination device shown in FIG. 1 is incorporated.

Replace the paragraph beginning at column 18 line 8 with the following:

A description will be given of a first example of a [projection display apparatus] projector in which the polarizing illumination device 1 described in the first embodiment is incorporated. In this embodiment, a transmission-type liquid crystal device is used as a modulating device for modulating light beams emitted from the polarizing illumination device according to display information.

Replace the paragraph beginning at column 18 line 15 with the following:

FIG. 12 is a schematic structural view showing the principal part of an optical system of a [projection display apparatus] projector 3 according to this embodiment, and shows the sectional structure in the XZ plane. The [projection display apparatus] projector 3 of this embodiment generally comprises the polarizing illumination device 1 described in the first embodiment, a colored light separating means for separating a white light beam into three colored lights, three transmission-type liquid crystal devices for modulating the colored lights according to display information and thereby forming display images, a colored light synthesizing means for forming a color image by synthesizing the three colored lights, and a projection optical system for projecting and displaying the color image.

Replace the paragraph beginning at column 19 line 1 with the following:

The [projection display apparatus] projector 3 having such a structure employs the liquid crystal devices each for modulating one type of polarized beam. Therefore, if ran-

domly polarized beams are directed to the liquid crystal device by using a conventional illumination device, about half of them are absorbed by a polarizing plate (not shown) and turned into heat. Therefore, the light use efficiency is low, and there is a need for a large and noisy cooling device for minimizing heat generation of the polarizing plate. The [projection display apparatus] projector 3 of this embodiment, however, substantially improves such problems.

Replace the paragraph beginning at column 19 line 12 with the following:

In the polarizing illumination device 1 of the [projection display apparatus] projector 3 according to this embodiment, only one type of polarized beam, for example, a P polarized beam is subjected to the rotary polarization action by a $\lambda/2$ phase plate, and the polarization direction thereof is made identical with that of the other type of polarized beam, for example, an S polarized beam. Since substantially the same type of polarized beams, which are polarized in the same direction, are directed to the liquid crystal devices 411, 412, and 413 located at three positions, the amount of light to be absorbed by the polarizing plate is extremely small, which makes it possible to enhance the light use efficiency, and to thereby obtain a bright projection image.

Replace the paragraph beginning at column 19 line 25 with the following:

Particularly, in the polarizing illumination device 1 used as an illumination device, since the shading plate 370 is placed inside the second optical element 300, other polarized beams which are unnecessary for display on the liquid crystal device rarely mix into the illumination light emitted from the polarizing illumination device 1. As a result, the amount of light absorbed by polarizing plates (not shown) respectively placed on the light incident

sides of the liquid crystal devices 411, 412, and 413 located at three positions is extremely small, and therefore, the amount of heat generated in light absorption is extremely small. Consequently, it is possible to substantially reduce the size of a cooling device for minimizing the increase in temperature of the polarizing plates and the liquid crystal devices. As mentioned above, a small cooling device will do for a [projection display apparatus] projector capable of displaying a considerably bright projection image with a considerably high-power light source lamp, which makes it possible to reduce noise of the cooling device, and to thereby achieve a quiet and high-performance [projection display apparatus] projector.

Replace the paragraph beginning at column 19 line 51 with the following:

As described in connection with the above described first embodiment, the widening of light beams emitted from the polarizing separation unit array 320 is restricted although the polarizing illumination device 1 of this embodiment incorporates polarizing conversion optical elements therein. This means that minimal light enters the liquid crystal device at a large angle in illuminating the liquid crystal device. Accordingly, it is possible to achieve a bright projection image without using a projection lens system having a small F-number and an extremely large aperture, and to thereby achieve a compact [projection display apparatus.]projector.

Replace the paragraph beginning at column 20 line 10 with the following:

The [projection display apparatus] projector may comprise a mirror optical system using two dichroic mirrors as the colored light synthesizing means. Of course, it is also possible in that case to incorporate the polarizing illumination device of this embodiment,

and to form a high-quality bright projection image having a high light use efficiency, similarly to this embodiment.

Replace the paragraph beginning at column 20 line 19 with the following:

Another embodiment of a [projection display apparatus] projector in which the polarizing illumination device 1 described in the first embodiment is incorporated will be described. In this embodiment, reflection-type liquid crystal devices are used as modulating devices for modulating light beams emitted from the polarizing illumination device according to display information.

Replace the paragraph beginning at column 20 line 26 with the following:

FIG. 13 is a schematic structural plan view of the principal part of an optical system in a [projection display apparatus] projector 4 of this embodiment. The [projection display apparatus] projector 4 of this embodiment generally comprises the polarizing illumination device 1 of the first embodiment, a polarizing beam splitter 480, a crossed dichroic prism 450 doubling as the colored light separation means and the colored light synthesizing means, three reflection-type liquid crystal devices 414, 415, and 416 serving as modulating devices, and a projection lens 460 serving as the projection optical system.

Replace the paragraph beginning at column 21 line 26 with the following:

The [projection display apparatus] projector 4 having such a structure also employs liquid crystal devices that each modulate one type of polarized beam, similarly to the above described [projection display apparatus] projector 3. Therefore, when a conventional illumination device for using randomly polarized beams as illumination light is employed, light

beams separated by the polarizing beam splitter 480 and directed to the reflection-type liquid crystal devices are reduced to approximately half the number of the randomly polarized beams, the light use efficiency is low and a bright projection image is difficult to obtain. In the [projection display apparatus] projector 4 of this embodiment, however, such a problem is substantially improved.

Replace the paragraph beginning at column 21 line 39 with the following:

That is, the [projection display apparatus] projector 4 of this embodiment can efficiently generate substantially the same type of polarized beams, that are polarized in the same direction, by using the polarizing illumination device 1 of the present invention instead of the conventional illumination device, and therefore, almost all light beams that are incident on the polarizing beam splitter 480 are directed as illumination light beams to the reflection-type liquid crystal devices 414, 415, and 416 located at three positions. As a result, it is possible to obtain a bright projection image that is uniform in brightness and color.

Replace the paragraph beginning at column 21 line 66 with the following:

As described in connection with the above described first embodiment, the widening of light beams emitted from the polarizing separation unit array 320 is restricted although the polarizing illumination device 1 of this embodiment incorporates polarizing conversion optical elements therein. This means that minimal light enters the liquid crystal device at a large angle in illuminating the liquid crystal device. Accordingly, it is possible to achieve a bright projection image without using a projection lens system having a small F-number

and an extremely large aperture, and to thereby achieve a compact [projection display apparatus.] projector.

Replace the paragraph beginning at column 22 line 10 with the following:

Condenser lenses 417 may be respectively interposed between the crossed dichroic prism 450 and the liquid crystal devices 414, 415, and 416 located at three positions in the [projection display apparatus] projector 4 of this embodiment. FIG. 14 shows a schematic structure of an optical system in that situation. Since such placement of these condenser lenses allows illumination light beams from the polarizing illumination device 1 to be directed to the liquid crystal devices while restricting the widening of the light beams, it is possible to further improve the efficiency in illuminating the liquid crystal devices, and the incident efficiency in making light beams reflected by the liquid crystal devices enter the projection lens 460. From the viewpoint of reduction of light losses at the lens interfaces, it is preferable to place each condenser lens integrally with the liquid crystal device as shown in FIG. 14, or with the crossed dichroic prism.

Replace the paragraph beginning at column 22 line 27 with the following:

Although S polarized beams are used as illumination light in the [projection display apparatus] projector 4 of this embodiment, P polarized beams may be used as illumination light. In this case, the polarizing illumination device 1 and the crossed dichroic prism 450 are placed opposed to each other through the polarizing beam splitter 480.

Replace the paragraph beginning at column 22 line 33 with the following:

Furthermore, though the crossed dichroic prism is used as the colored light separation means and the colored light synthesizing means in this embodiment, the [projection display apparatus] projector may comprise two dichroic mirrors instead. Of course, it is also possible in that case to incorporate the polarizing illumination device of this embodiment, and to form a high-quality bright projection image having a high light use efficiency, similarly to this embodiment.

Replace the paragraph beginning at column 22 line 41 with the following:

As described above, according to the present invention, it is possible to achieve a polarizing conversion device and a polarizing illumination device capable of generating with high efficiency only the same type of polarized beams that have a more uniform light intensity distribution in a illumination region than incident light beams, and, at the same, that are polarized in the same direction. Furthermore, it is possible to easily achieve a display apparatus and a [projection display apparatus] projector capable of displaying a high-quality bright image through the use of the polarizing conversion device and the polarizing illumination device of the present invention.

(REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK)

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A polarizing conversion device, comprising: a polarizing separation element having a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element; a selective phase plate disposed at the light emergent side of said polarizing separation element that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams, and a device for preventing light from directly entering said reflecting plane disposed at the light incident side of said polarizing separation element.

2. (Original) The polarizing conversion device according to claim 1, wherein the device for preventing light from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

3. (Original) The polarizing conversion device according to claim 2, wherein said shading device is a reflecting plate.

4. (Original) The polarizing conversion device according to claim 2, wherein said shading device is a reflecting film, and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

5. (Original) The polarizing conversion device, according to claim 2, wherein said optical attenuating device is a light diffusing plate.

6. (Original) The polarizing conversion device according to claim 2, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

7. (Original) The polarizing conversion device according to claim 1, wherein said device for preventing light from directly entering said reflecting plane and said polarizing separation element are integrated with each other.

8. (Amended) A polarizing illumination device, comprising: a light source that emits a light beam; a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position; and second optical element disposed at or near the converging position, the second optical element including:

[a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;] polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that

separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element; selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams; a superimposing lens that superimposes the polarized beams; and a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element.

9. (Original) The polarizing illumination device according to claim 8, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

10. (Original) The polarizing illumination device according to claim 9, wherein said shading device is a reflecting plate.

11. (Original) The polarizing illumination device according to claim 9, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

12. (Amended) The polarizing illumination device according to [claim 9,] claim 47, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

13. (Original) The polarizing illumination device according to claim 9, wherein said optical attenuating device is a light diffusing plate.

14. (Original) The polarizing illumination device according to claim 9, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

15. (Amended) The polarizing illumination device according to [claim 9,] claim 47, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser lens array.

16. (Original) The polarizing illumination device according to claim 8, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.

17. (Amended) The polarizing illumination device according to [claim 8,] claim 46, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.

18. (Amended) A display apparatus, comprising: a light source that emits a light beam; a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position; a second optical element disposed at or near the converging position, the second optical element including: [a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;]a polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element; a selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams, a superimposing lens that superimposes the polarized beams; and a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element; and a modulating device for modulating a light beam emitted from said second optical element.

19. (Twice Amended) A [projection display apparatus,] projector, comprising: a light source that emits a light beam; a first optical element that separates the light beam emitted from said light source into a plurality of intermediate beams that converge at a converging position; a second optical element disposed at or near the converging position, the second optical element

including: [a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams;] a polarizing separation element that spatially separates each of the intermediate beams into an S polarized beam and a P polarized beam, the polarizing separation element including a light incident side, a light emergent side, a polarizing separation plane that separates P and S polarized beams by transmitting one of the P and S polarized beams therethrough toward the light emergent side of the polarizing separation element and reflecting the other of the P and S polarized beams, and a reflecting plane disposed substantially parallel with said polarizing separation plane that reflects the other of the P and S polarized beams reflected by said polarizing separation plane toward the light emergent side of the polarizing separation element; a selective phase plate that aligns a polarization direction of one of the P and S polarized beams separated by said polarizing separation element with a polarization direction of the other of the P and S polarized beams; a superimposing lens that superimposes the polarized beams; and a device for preventing each of the intermediate beams from directly entering said reflecting plane interposed between said first optical element and said polarizing separation element; at least one modulating device for modulating a light beam emitted from said second optical element according to display information; and a projection optical system for projecting the light beam modulated by said modulating device onto a projection plane.

20. (Amended) The [projection display apparatus] projector according to claim 19, further comprising: color light separation system for separating the light beam into a plurality of colored lights; a plurality of said modulating devices for respectively modulating the colored lights; and colored light synthesizing system for synthesizing the colored lights modulated by said plu-

rality of modulating devices; wherein a synthesized beam synthesized by said colored light synthesizing system is projected onto said projection plane through said projection optical system.

21. (Amended) The [projection display apparatus] projector according to claim 19, wherein said at least one modulating device is a reflection-type device.

22. (Original) A method of converting randomly polarized beams into substantially one type of polarized beams, comprising the steps of: separating P and S polarized beams with a polarizing separation element by transmitting one of the P and S polarized beams through a separation plane of the polarizing separation element toward a light emergent side of the polarizing separation element, reflecting the other of the P and S polarized beams with the separation plane, and reflecting the other of the P and S polarized beams reflected with the separation plane toward the light emergent side of the polarizing separation element with a reflecting plane that is disposed substantially parallel with the polarizing separation plane; aligning a polarization direction of one of the P and S polarized beams separated by the polarizing separation element with a polarization direction of the other of the P and S polarized beams with a selective phase plate disposed at the light emergent side of the polarizing separating element; and preventing light from directly entering the reflecting plane with at least one of a shading device and an optical attenuating device.

23. (Original) The method according to claim 22, wherein the light is prevented from directly entering the reflecting plane with a reflecting plate.

24. Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a reflecting film that is formed on a light incident surface of a light incident side of the polarizing separation element.

25. (Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a light diffusing plate.

26. (Original) The method according to claim 22, wherein light is prevented from directly entering the reflecting plane with a light diffusing surface formed on a light incident surface of a light incident side of the polarizing separation element.

27. (Original) A polarizing conversion device, comprising: means for separating P and S polarized beams, including a separation plane, a reflecting plane, a light incident side and a light emergent side, by transmitting one of the P and S polarized beams through the separation plane toward the light emergent side, reflecting the other of the P and S polarized beams with the separation plane, and reflecting the other of the P and S polarized beams reflected with the separation plane toward the light emergent side with the reflecting plane; means for aligning a polarization direction of one of the P and S polarized beams separated by the means for separating with a polarization direction of the other of the P and S polarized beams; and means for preventing light from directly entering the reflecting plane.

28. (New) The display apparatus according to claim 18, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

29. (New) The display apparatus according to claim 28, wherein said shading device is a reflecting plate.

30. (New) The display apparatus according to claim 28, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

31. (Amended) The display apparatus according to claim 50, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

32. (New) The display apparatus according to claim 28, wherein said optical attenuating device is a light diffusing plate.

33. (New) The display apparatus according to claim 28, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

34. (Amended) The display apparatus according to claim 50, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser leans array.

35. (New) The display apparatus according to claim 18, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.

36. (Amended) The display apparatus according to claim 49, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.

37. (Amended) The projector according to claim 19, wherein the device for preventing each of the intermediate beams from directly entering said reflecting plane includes at least one of a shading device and an optical attenuating device.

38. (New) The projector according to claim 37, wherein said shading device is a reflecting plate.

39. (New) The projector according to claim 37, wherein said shading device is a reflecting film and said reflecting film is formed on a light incident surface of the light incident side of said polarizing separation element.

40. (Amended) The projector according to claim 53, wherein said shading device is a reflecting film and said reflecting film is formed on a light emergent surface of said condenser lens array.

41. (New) The projector according to claim 37, wherein said optical attenuating device is a light diffusing plate.

42. (New) The projector according to claim 37, wherein said optical attenuating device is a light diffusing surface formed on a light incident surface of the light incident side of said polarizing separation element.

43. (Amended) The projector according to claim 53, wherein said optical attenuating device is a light diffusing surface formed on a light emergent surface of said condenser lens array.

44. (New) The projector according to claim 19, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said polarizing separation element.

45. (Amended) The projector according to claim 52, wherein said device for preventing each of the intermediate beams from directly entering said reflecting plane is integrated with said condenser lens array.

46. (New) The polarizing illumination device according to claim 8, the second optical element, further comprising: a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

47. (New) The polarizing illumination device according to claim 46, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

48. (New) The polarizing illumination device according to claim 8, the superimposing lens being a lens array that includes a plurality of lenses.

49. (New) The display apparatus according to claim 18, the second optical element, further comprising: a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

50. (New) The display apparatus according to claim 49, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

51. (New) The display apparatus according to claim 18, the superimposing lens being a lens array that includes a plurality of lenses.

52. (New) The projector according to claim 19, the second optical element, further comprising: a condenser lens array that includes a plurality of condenser lenses that respectively condense the intermediate beams.

53 (New) The projector according to claim 52, the device to prevent each of the intermediate beams from directly entering said reflecting plane including at least one of a shading device and an optical attenuating device.

54. (New) The projector according to claim 19, the superimposing lens being a lens array that includes a plurality of lenses.

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Any other inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Spector whose telephone number is (571) 272-2338. The examiner can normally be reached at this number Monday through Friday between 6:00 AM and 2:30 PM. The Official FAX number for the United States Patent and Trademark Office is (571) 273-8300.

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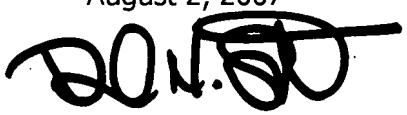

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